Artificial Intelligence 2
Quiz #08 (Introduction to machine learning)

What are the forms of machine learning based on feedback received?

Which data is available for supervised learning?

What is the difference between classification and regression?

Explain the Occam's razor principle.

Define a decision tree. How is the decision tree used to take decisions?

Describe the ID3 algorithm. Is the order of attributes identical in all branches of the decision tree?

What is entropy? How is it formalized? In particular, how entropy is used in binary classification? What is the relation between $B(p/(p+n))$ and $B(n/(p+n))$, where B is entropy of a Boolean variable, and p and n are the numbers of positive and negative examples respectively?

What is overfitting? How is this problem resolved in decision tree learning? Can the decision tree pruning be used already during the construction of the decision tree? Why?

What if some attribute in the decision tree learning is continuous?

Describe the two methods of linear regression.

Can we use the method of linear regression for classification?

What is difference between a parametric and a nonparametric model? Give some examples of these models.

Show how the method of nearest neighbors can be used for classification and for regression.

Describe the core ideas of Support Vector Machines. What is a support vector? What is specific for the maximum margin separator? What is the role of the kernel function?

What is ensemble learning? Can ensemble learning using linear classifiers learn classification of linearly non-separable sets?

Describe boosting. What is the relation between boosting and ensemble learning?